






Test Report issued under the responsibility of:



TEST REPORT IEC 60670-1 Boxes and enclosures for electrical accessories for household and similar fixed electrical installations Part 1: General requirements	
Report Number.....	MI18-0025151-01
Date of issue	08/01/2019
Total number of pages	10 (test report) + 6 (Annex 1)
Name of Testing Laboratory preparing the Report	IMQ S.p.A. I - 20138 MILANO (MI) - Via Quintiliano 43
Applicant's name	4BOX SRL
Address.....	piazzale Segesta 15 – 20148 Milano - Italy
Test specification:	
Standard	IEC 60670-1 (First Edition): 2002 + A1:2011
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No.	IEC60670_1B
Test Report Form(s) Originator	IMQ
Master TRF	Dated 2016-04
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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
General disclaimer:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

Test item description :	Enclosure for electrical accessories	
Trade Mark :	 4BOX (logo)	
Manufacturer	4BOX SRL – piazzale Segesta 15 – 20148 Milano - Italy	
Model/Type reference	Wide (see general product information)	
Ratings	(See test item particulars)	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	IMQ S.p.A.
Testing location/ address :		I – 20138 Milano – Via Quintiliano 43
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address :		
Tested by (name, function, signature) :		Mascheroni V.
Approved by (name, function, signature) ... :		Primicerio A.
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address :		
Tested by (name, function, signature) :		
Approved by (name, function, signature) ... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address :		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address :		
Tested by (name, function, signature) :		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ... :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):	
Test report IEC 60670-1:2002+A1:2011 : Annex 1 - Photographic documentation:	10 pages 6 pages
Summary of testing:	
Tests performed (name of test and test clause): Partial tests according to IEC 60670-1 (First Edition): 2002 + A1:2011, clauses concerned: 13.2 – 13.3 only.	Testing location: IMQ S.p.A. I – 20138 Milano – Via Quintiliano 43
Summary of compliance with National Differences (List of countries addressed): See attachment “European Group Differences and National Differences”	
Copy of marking plate (for example): The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.	
	

Test item particulars			
7.1	Nature of material	<input checked="" type="checkbox"/> 7.1.1	Insulating
		<input type="checkbox"/> 7.1.2	Metallic
		<input type="checkbox"/> 7.1.3	Composite
7.2	Method of installation	<input checked="" type="checkbox"/> 7.2.1	Flush, semi-flush or embedded in
		<input type="checkbox"/> 7.2.1.1	Non-combustible walls, ceilings or floors
		<input type="checkbox"/> 7.2.1.2	Combustible walls, ceilings or floors
		<input type="checkbox"/> 7.2.1.3	Hollow walls, hollow ceilings, hollow floors or furniture
		<input checked="" type="checkbox"/> 7.2.2	Surface mounting on
		<input checked="" type="checkbox"/> 7.2.2.1	Non-combustible walls, ceilings, floors or furniture
		<input type="checkbox"/> 7.2.2.2	Combustible walls, ceilings, floors or furniture
		<input type="checkbox"/> 7.2.3	Placement
		<input type="checkbox"/> 7.2.3.1	Suitable for installation into concrete during the casting process (see 7.6)
		<input type="checkbox"/> 7.2.3.2	Suitable for all types of installation except into concrete
7.3	Type of inlets (outlets)	<input type="checkbox"/> 7.3.1	With inlets for sheathed cables for fixed installations
		<input type="checkbox"/> 7.3.2	With inlets for flexible cables
		<input type="checkbox"/> 7.3.3	With inlets for plain or corrugated conduits
		<input type="checkbox"/> 7.3.4	With inlets for threaded conduits
		<input type="checkbox"/> 7.3.5	With inlets for other types of conductors/cables or conduits
		<input type="checkbox"/> 7.3.6	With spouts (hub)
		<input checked="" type="checkbox"/> 7.3.7	Without inlets. Inlet openings will be made during installation
7.4	Clamping means	<input type="checkbox"/> 7.4.1	With cable retention
		<input type="checkbox"/> 7.4.2	With cable anchorage
		<input type="checkbox"/> 7.4.3	With clamping means for flexible conduit
		<input type="checkbox"/> 7.4.4	Without clamping means
7.5	Minimum and maximum temperatures during installation	<input type="checkbox"/> 7.5.1	-5 °C to +60 °C
		<input type="checkbox"/> 7.5.2	-15 °C to +60 °C
		<input type="checkbox"/> 7.5.3	-25 °C to +60 °C
7.6	Maximum temperature during the casting process	<input type="checkbox"/> 7.6.1	+60 °C
		<input type="checkbox"/> 7.6.2	+90 °C
7.7	Boxes and enclosures for hollow walls and the like according to 7.2.1.3	<input type="checkbox"/> 7.7.1	Class Ha
		<input type="checkbox"/> 7.7.2	Class Hb
		<input type="checkbox"/> 7.7.2.1	for walls
		<input type="checkbox"/> 7.7.2.2	for ceilings
		<input type="checkbox"/> 7.7.3	degree of protection of the part mounted in the hollow wall
		<input type="checkbox"/> 7.7.3.1	IP2X
		<input type="checkbox"/> 7.7.3.2	> IP2X
7.8	The provision for fixing accessories to boxes	<input type="checkbox"/> 7.8.1	Boxes supplied with screws
		<input type="checkbox"/> 7.8.2	Boxes intended to receive screws
		<input type="checkbox"/> 7.8.3	Boxes intended to receive claws
		<input type="checkbox"/> 7.8.4	Boxes intended to receive other means

Possible test case verdicts:

- test case does not apply to the test object : N/A
- test object does meet the requirement : P (Pass)
- test object does not meet the requirement : F (Fail)

Testing..... :

Date of receipt of test item..... : 16/04/2018 (sample sent by applicant)
BEM 90606 + BEM 92289

Date (s) of performance of tests..... : from 16/04/2018 up to 08/01/2019

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Unless otherwise stated the uncertainties for the tests and measurements are evaluated in according to IMQ Operational Instruction IO-LAB-001 and IO-LAB-004.

The uncertainties evaluation has been carried out in accordance with IEC Guide 115 "Application of Uncertainty of measurement's to Conformity Assessment Activity in the Electrotechnical Sector" and IEC 60504. Internal Procedure PG-037 ensures that the requirements for traceability of calibrations, of all test equipment requiring calibration, and calibration intervals are met. The ability of reliability of this product to perform its intended function in a particular application has not been investigated. Unless otherwise specified, warnings, installation instructor and/or user manual provided with the sample have been checked in Italian or English version only.

Throughout this report the indication "N/C" is used to indicate that the test case applies to the test object but it has not been carried out.

Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60504:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ☐ Yes
☒ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) : Lumi legend Electrical Co. Ltd.
N° 18 Lane 239 – Beihai Road, Jiangbei, Ningbo
315032 P.R. CHINA.

General product information:**DESCRIPTION OF THE ENCLOSURES SERIES Wide**

Cat. Ref	No. of modules	Description
4B.W.RAL	2	Supporting frame with cover IP55, grey colour RAL 7035
4B.W.01	2	Supporting frame with cover IP55, white colour
4B.W.03	2	Supporting frame with cover IP55, anthracite colour
4B.W.RAL.015	2	Supporting frame with cover IP55 and socket-outlet standard Sheet P40, grey colour RAL 7035
4B.W.01.015	2	Supporting frame with cover IP55 and socket-outlet standard Sheet P40, white colour
4B.W.03.015	2	Supporting frame with cover IP55 and socket-outlet standard Sheet P40, anthracite colour
4B.WB.RAL	-	Wall box, grey colour RAL 7035
4B.WB.01	-	Wall box, white colour
4B.WB.03	-	Wall box, anthracite colour

Degree of protection IP55

On the request of the manufacturer the IP55 degree of protection has been verified on the following codes 4B.W.RAL, 4B.W.01, 4B.W.03, 4B.W.RAL.015, 4B.W.01.015, 4B.W.03.015. The degree of protection IP55 is obtained mounted the supporting frames on a recessed box, with the cover closed and with the accessory installed on waterproof and plain surface without groove (smooth furring tile, marble)

Degree of protection IP66

the degree of protection IP66 is obtained by mounting the supporting frames, code: 4B.W.RAL, 4B.W.01, 4B.W.03, 4B.W.RAL.015, 4B.W.01.015, 4B.W.03.015 with the lid closed on the wall boxes code 4B.WB.RAL, 4B.WB.01, 4B.WB.03.

IEC60670_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
13	RESISTANCE TO AGEING, PROTECTION AGAINST INGRESS OF SOLID OBJECTS AND AGAINST HARMFUL INGRESS OF WATER		
13.1	Resistance to ageing		
13.1.1	Specimens of insulating and composite boxes and enclosures, glands, grommets and replaceable membranes placed in a heating cabinet at $(70 \pm 2) ^\circ\text{C}$ for (168 ± 4) h and then kept at room temperature for (96 ± 4) h		
	Glands tightened with a torque equal to 2/3 of the torque applied during the test of 12.13 (Nm):	-	—
	Greater torque value stated by the manufacturer, if any (Nm):	-	—
	After the test: no harmful deformation or similar damage		N/C
13.1.2	Grommets, blanking-plug and entry membranes in inlet openings and protecting membranes are reliably fixed and are not displaced by the mechanical and thermal stresses occurring in normal use		N/C
	Specimens that have been subjected to the treatment specified in 13.1.1 placed in a heating cabinet at $(40 \pm 2) ^\circ\text{C}$ for $2 \text{ h} \pm 15 \text{ min}$		
	Immediately after this period the tip of test probe 11 of IEC 61032 is applied for (5 ± 1) s with a force of $(30 - 2)$ N. During the tests: grommets, blanking-plug and/or membranes not deformed to such an extent that live parts of any included accessory become accessible		N/C
	Grommets, blanking-plug and/or membranes likely to be subjected to an axial pull: axial pull of $(30 - 2)$ N applied for (5 ± 1) s. During the tests: grommets, blanking-plug and/or membranes not deformed to such an extent that live parts of any included accessory become accessible		N/C
	Test repeated on same enclosures fitted with grommets, blanking-plug and/or membranes not subjected to any treatment		N/C
	After the test: no harmful deformation, cracks or similar damage		N/C
13.1.3	Grommets, blanking-plug and entry membranes in inlet openings of boxes and enclosures classified according to 7.5.2 and 7.5.3: introduction of the cables and conduit permitted when the ambient temperature is low		N/C
	Test on enclosures fitted with grommets, blanking-plug and/or membranes not subjected to any ageing treatment kept for 2 h in a refrigerator		
	Test temperature ($^\circ\text{C}$):		—

IEC60670_1B - ATTACHMENT				
Clause	Requirement + Test	Result - Remark		Verdict
	Immediately after conditioning: it is possible to pierce any blind grommets, blanking-plug and entry membranes and to introduce cables and conduit of the maximum diameter intended			N/C
	After the test: no harmful deformation, cracks or similar damage			N/C
13.2	Protection against the ingress of solid objects (see description on general product information)			
	Enclosures provide a degree of protection against the ingress of solid objects in accordance with the declared IP code	IP5X	IP6X	P
	Enclosures mounted as in normal use with screwed glands or grommets fitted with cables as declared by the manufacturer:			
	- type of cable, smallest cross-sectional area (mm ²)	-		—
	- type of cable, largest cross-sectional area (mm ²):	-		—
	Enclosures mounted as in normal use with screwed glands or grommets fitted with conduits as declared by the manufacturer:			
	- smallest diameter or dimensions (mm).....	-		—
	- largest diameter or dimensions (mm)	-		—
	Fixing screws of the cover or cover-plate tightened with a torque equal to 2/3 of the value of Table 4 used for the test of 12.9 (Nm).....	0,53Nm	0,33Nm	—
	Greater torque value stated by the manufacturer, if the relevant information is provided (Nm)			—
	- IP5X: test performed as specified in IEC 60529 category 2 with the drain holes, if any, not opened			P
	- IP≤4X: test probe does not pass through any opening other than drain holes			N/A
	- IP≤4X: test probe applied on drain holes does not touch live parts within the enclosure			N/A
	- IP5X: dust does not cover the whole inner surface			P
	- IP6X: there is no dust inside the box or enclosure			N/A
13.3	Protection against harmful ingress of water			
13.3.1	Enclosures with IP>X0 provide a degree of protection against harmful ingress of water in accordance with the declared IP code	IPX5	IPX6	P
	Enclosure dimensions: reference surface S (m ²) / perimeter (m).....	< 0,04 m ²	< 0,04 m ²	—
	Appropriate test performed on surface, flush or semi-flush enclosures as specified in IEC 60529 under the following conditions:			

IEC60670_1B - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
	- dimension $S \leq 0,04 \text{ m}^2$ or perimeter $\leq 0,8 \text{ m}$ according to 13.3.2 and 13.3.3		P
	- dimension $S > 0,04 \text{ m}^2$ and perimeter $> 0,8 \text{ m}$ according to 13.3.2 and 13.3.4		N/A
	Enclosures with screwed glands or grommets fitted with cables as declared by the manufacturer:		
	- type of cable, smallest cross-sectional area (mm ²)		—
	- type of cable, largest cross-sectional area (mm ²):		—
	Enclosures with screwed glands or grommets fitted with conduits as declared by the manufacturer:		
	- smallest diameter or dimensions (mm).....		—
	- largest diameter or dimensions (mm)		—
	Fixing screws of the cover or cover-plate tightened with a torque equal to 2/3 of the value of Table 4 used for the test of 12.9 (Nm).....		—
13.3.2	Surface-mounting enclosures mounted as for normal use		P
	Flush type and semi-flush type enclosures fixed in a test wall:		
	- according to the manufacturer's instructions		N/A
	- according to Figure 5		N/A
	Enclosures fitted with cables having conductors of the largest and smallest cross-sectional area as declared by the manufacturer		—
	IPX3 and IPX4 enclosures: use of oscillating tube (Figure 4) or spray nozzle according to IEC 60529 (Figure 5).....		—
13.3.3	Immediately after the test no more than 0,2 ml x S (cm ²) water in the enclosure (ml)	IPX5 : 0 ml	
		IPX6 : Max 3 ml observed (*)	
	Specimens withstand an electric strength test specified in 14.3 started within 5 min of the completion of IP test		P
13.3.4	Immediately after the test: indicator paper still dry		P
(*) Max admitted :5,6 ml			

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Measurement/Testing	Testing /measuring equipment/ material used, (Equipment ID)	Last calibration date	Calibration due date
Degree of protections	torque screwdriver S-3439	02/18	02/19
Degree of protections	caliper S-04319	11/18	11/19
Degree protection IPX6	Flowmeter S-04312	05/18	05/19
Degree protection IPX5	Flowmeter S-04883	05/18	05/19
Degree protection IP5X/IP6X	Dusting chamber P03746	-	-
Degree protection IP6X	gas meter S07672	08/18	08/19

